REMARKS

Applicants respectfully request reconsideration of this application as amended. Claims 1-110 are pending in the application. Claims 1, 4, 10, 12-14, 16, 19, 25-26, 29, 40, 42, 45, 48, 56, 65, and 68 have been amended. No claims have been added. Claim 75 has been cancelled. Claim 111 has been added.

The Examiner rejected the drawings because of handwritten markups in the figures. Applicants concurrently submit formal drawings.

The Examiner has indicated that Claims 7-9, 22-24, 31-33, 50-52, and 71-110 are allowed. Applicants thank the Examiner for the indication. The remainder of the remarks are directed to the allowed claims 1-6, 10-21, 25-30, 34-49, and 53-70.

The Examiner objected to drawings as failing to comply to 37 C.F.R. §1.84(p)(4) because the reference character "705" had been used to designate both the link labeled "cleanup" and the block labeled "mask." Applicants have included herein a proposed drawing change to Figure 7 in which "mask 705" has been changed to "mask 715." Applicants respectfully request the Examiner to enter the drawing change and withdraw the objection. Applicants have also amended the specification to change references of "mask 705" to "mask 715." Applicants respectfully submit that no new matter has been added.

The Examiner objected to Claims 4-9, 19-24, 29-42, 48-55, and 63 because of the number of informalities. Applicants have amended Claims 4, 19, 29, 48, and 68 to overcome the rejections. However, the Examiner has set forth that Claim 63 recites "refinement" in line 3 and indicates that it should have been "refinement," which is the same spelling. However, Applicants could not find a misspelling of refinement in Claim 63 and request the Examiner specify where the error exists.

With respect to Claims 75, the Examiner objected to Claim 75 under 37 C.F.R. §1.75(c) as being an improper dependent claim for failing to further limit the subject matter of a previous claim. Without prejudice, Applicants have cancelled Claim 75.

The Examiner indicated that Claims 11, 38, and 65-67 would be allowable; however the Examiner indicated claims 13, 40, 42, and 68-70 would be objected to under 37 C.F.R. §1.75 as being a substantial duplicate thereof. However, per the Examiner's suggestion, Applicants have amended claims 13, 40, and 42 to change the dependencies. Therefore, Applicants respectfully request the Examiner to withdraw the objection.

Applicants have amended the claims, particularly to overcome the Examiner's rejection of indefiniteness under 35 U.S.C. §112 and to more clearly distinguish the invention from the prior art cited. The Examiner initially rejected claims 10-15 under 35 U.S.C. §112, second paragraph. Accordingly, Applicants have amended claims 1, 4, 10, 12-14, 16, 19, 25-26, 29, 40, 42, 45, 48, 56, 65, and 68 to particularly point out and distinctly claim, in full, clear, concise and exact terms, the subject matter which Applicants regard as their invention.

The Examiner rejected Claims 1-4, 16-19, 25-29, 45-48, 56, and 59-64 under 35 U.S.C. §102(b) as being anticipated by JPEG 2000 Part I Filed Committee Draft Version 1.0, 16 March 2000 (JPEG2K). Claim 1 sets forth the following:

A method comprising:

performing a significance propagation pass on a group of coefficients;

creating a data structure, while performing the significance propagation pass, that indicates locations of coefficients in the group of coefficients that are to be processed in subsequent passes; and

performing a refinement sub-bitplane pass by

accessing the data structure to obtain information to identify

coefficients to be skipped for refinement sub-bitplane pass processing,

accessing a memory storing the group of coefficient using

the information to only access coefficients identified as being in the

refinement pass, and

coding refinement bits accessed from the memory.

(emphasis added)

Thus, Claim 1 sets forth creating a data structure that indicates locations of

coefficients that are to be processed in subsequent passes, accessing that data structure

to obtain information to identify coefficients to be skipped for refinement sub-bit-plane

pass processing, and then accessing the memory storing the group of coefficients using

that information to only access coefficients identified as being in the refinement pass.

Applicants respectfully submit that JPEG2K does not disclose such limitations.

JPEK2K does disclose the JPEG 2000 standard that sets forth that the refinement

pass is performed on the data. However, in contrast to the Examiner's position, JPEG2K

does not disclose any data structure that may be used to indicate coefficients that are to

be skipped for refinement sub-bit-plane passing processing and accessing memory to

obtain coefficients for the refinement pass while accessing other coefficients that are not

needed for the refinement pass. A typical implementation of JPEG 2000 might read the

entire block of coefficients three times, one for each coding pass of a bit-plane (the clean

up refinement and significance propagation passes). However, the present invention

differs from such an implementation, and the present application describes a way to

only read those coefficients actually needed for the refinement pass. Thus, a data

structure created while performing the significance propagation pass may be used by

the context model to reduce the number of accesses to memory. Using the data

structures, instead of checking each memory cell to determine what pass the

information is and then having to skip them, the context model need only access the memory once. Furthermore, the data structures allow access to multiple locations at the same time, such as when cleanup bits are coded four at a time. Thus, these data structures allow these sub-bitplane passes to be coded efficiently by allowing coefficients of other passes to be skipped. Thus, Applicants respectfully submit that the present invention as claimed is not anticipated by JPEG2K.

The Examiner rejected Claims 5, 20, 43, and 44 under 35 U.S.C. §103(a) as being unpatentable over JPEG2K further in view of Lei. As stated above, the present invention as claimed sets forth creating a data structure while performing the significant propagation pass, accessing that data structure to obtain information to identify coefficients to be skipped when doing the refinement sub-bit-plane pass processing, and only accessing the coefficients identified as being in the refinement pass from memory. As stated above the JPEG2K reference does not disclose this feature. Lei does not overcome this deficiency. Therefore, because all of the limitations of the claims are not met by the combined teaching of JPEG2K and Lei, Applicants respectfully submit the present invention as claimed is not obvious in view of the combination of the JPEG2K reference and Lei.

Furthermore, even if the combination of JPEG 2000 and Lei disclosed all the elements of Claim 1, Applicants respectfully submit that one skilled in the art would not look to the JPEG2K reference and Lei to arrive at the present invention as claimed. The Examiner sets forth that Lei and JPEG2K are compatible because they are in the same field of endeavor, that being still image compression. Applicants respectfully submit there is no motivation in the references to combine them. The fact that the JPEG2K reference does not teach, mention, or disclose the use of data structure and the fact that Lei discloses the use of different lists or even specifies that different types of coefficients exist would not allow one to modify the JPEG2K reference with the teaching of Lei to

arrive at using different data structures for different passes that are created during the significance propagation pass. Therefore, in view of this, Applicants respectfully submit that Claims 5, 20, and 43-44 are not obvious in view of JPEG2K and Lei.

The Examiner rejected Claim 6, 10-15, 21, 30, 37-42, 49, and 57-58 under 35 U.S.C. §103(a) as being unpatentable over JPEG2K and further in view of Lei. For the same reasons given above in responding to the previous rejection, Applicants respectfully submit the present invention as claimed in Claims 6, 10-15, 21, 30, 37-42, 49, and 57-58 is not obvious in view of the combination of the JPEG2K and Lei references.

The Examiner rejected Claim 34-36 and 53-55 under 35 U.S.C. §103(a) as being unpatentable over JPEG 2000 and Lei and further in view of Miyashita et al. As stated above, the present invention as claimed sets forth creating a data structure while performing the significant propagation pass, accessing that data structure to obtain information to identify coefficients to be skipped when doing the refinement sub-bit-plane pass processing, and only accessing the coefficients identified as being in the refinement pass from memory. As stated above the JPEG2K reference does not disclose this feature. Lei and Miyashita do not overcome this deficiency. For the same reasons given above in responding to the previous rejection, Applicants respectfully submit the present invention as claimed in Claims 34-36 and 53-55 is not obvious in view of the combination of the JPEG2K, Lei and Miyashita references.

The Examiner rejected Claims 65 and 68 under 35 U.S.C. §103(a) as being unpatentable over Jan in view of Lindenstruth. Jan discloses a direct sequential-bit variable length decoder that is part of a high definition television HDTV receiver. The decoder decodes video data in to fix length data. As set forth in column 3, the Examiner points to the FIFO in Figure 2 as the memory to store runs and skip counts and as well as points to a variable length decoder 54 of Figure 2 as a decoding hardware. However, The Examiner indicates that Jan does not disclose the run and skip counts being stored

in two distinct portions of memory separated by a third portion nor are they accessed from the memory simultaneously. However, the Examiner believes Lindenstruth teaches the storing of data in different portions of multi-port memory that is separated by other portions that can be accessed by multiple processors simultaneously.

Claim 65 sets forth decoding hardware coupled to decode a run count and a skip count obtained from memory simultaneously. The Examiner has inadvertently interpreted the term "simultaneously" as qualifying when the run count and skip count are obtained from memory. However, in view of the specification, proper reading of the claim is that the decoding hardware decodes the run count and the skip count simultaneously. The memory facilitates this by storing the run and skip counts separated in two portions of memory that are separated by another portion. Thus, such a memory would allow starting of a run count from one side of the memory and skip counts from the other side. That is, one side may be the beginning of the memory while the other side is the end of the memory. This allows for simultaneously decoding a run count and skip count in parallel because the start of both one run and one skip word is known at the same time, instead of having to decode a run count first, determine its length, and then decode a skip count. If they were serial (run-skip-run, etc.), one at a time would be known (as one would have to be decoded to find the other). This is clearly not disclosed in Jan or Lindenstruth. Therefore in view of this, Applicants respectfully submit that the present invention as claimed is not obvious in view of the combination of Jan and Lindenstruth.

The Examiner rejected Claims 66-67 and 69-70 under 35 U.S.C. §103(a) as being unpatentable over Jan, Lindenstruth and further in view of Yamashita et al. Applicants respectfully submit for the same reasons given above the present invention as claimed is not obvious in view of the combination of Jan, Lindenstruth and Yamashita. That is, the claims set forth decoding a run count and skip count simultaneously. As disclosed
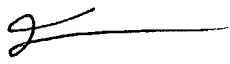
above, this feature is not shown in Jan and Lindenstruth. Yamashita does not make up for the deficiency. Therefore, in view of this, Applicants respectfully submit that the present invention as claimed is not obvious in view of Jan, Lindenstruth, and Yamashita.

Accordingly, Applicants respectfully submit that the rejections under 35 U.S.C. §102 and §103 have been overcome by the amendments and the remarks and withdrawal of these rejections is respectfully requested. Applicant submits that Claims 1-74 and 76-110 as amended and claim 111 as added are now in condition for allowance and such action is earnestly solicited.

Please charge any shortages and credit any overcharges to our Deposit Account No. 02-2666.

Respectfully submitted,
BLAKELY SOKOLOFF TAYLOR & ZAFMAN LLP

Dated: _____, 2004

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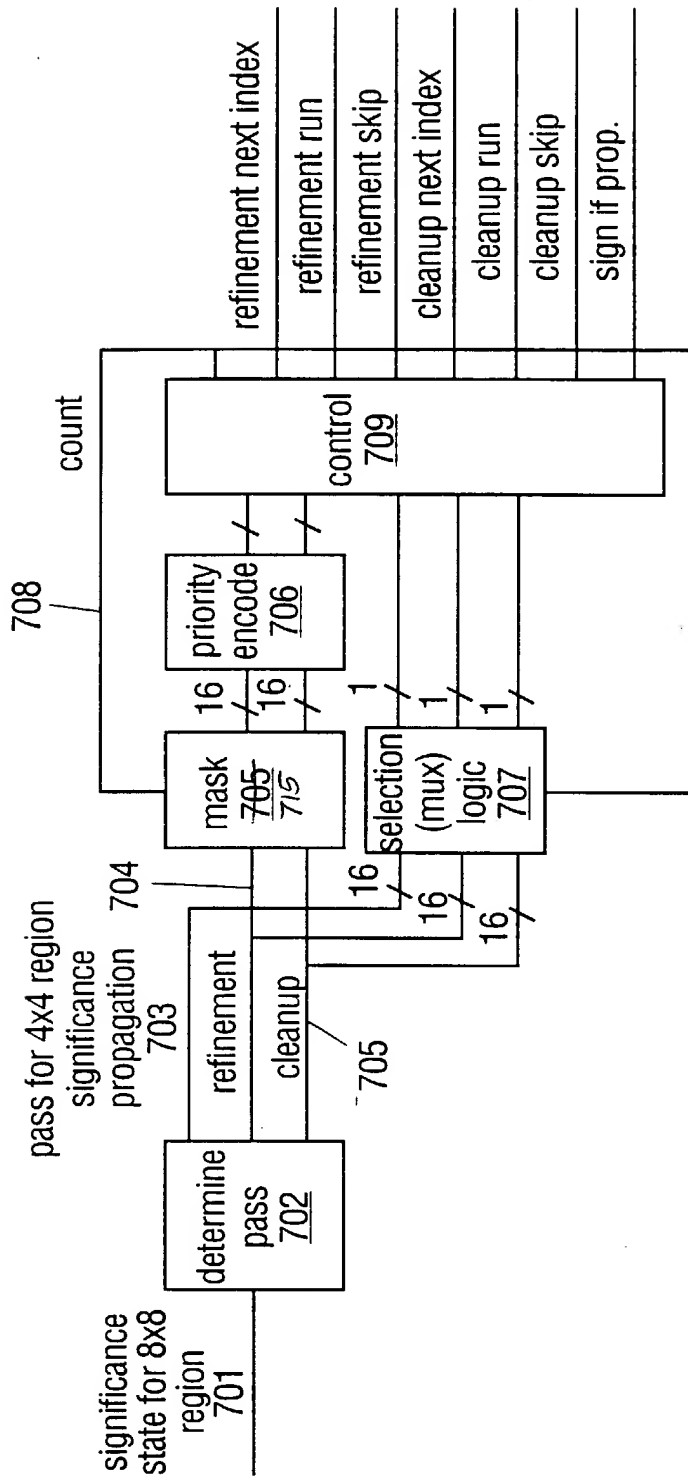Debra L. Riggio   Date

FIG. 7

- significance state for 8x8 region 701
- determine pass 702
- pass for 4x4 region 704
- significance propagation 703
- refinement
- cleanup
- 705
- mask 705 / 715
- selection (mux) logic 707
- priority encode 706
- 16, 16
- 1, 1, 1
- 16, 16, 16
- 708
- count
- control 709
- refinement next index
- refinement run
- refinement skip
- cleanup next index
- cleanup run
- cleanup skip
- sign if prop.

FIG. 8

SP pass: 10*2 for SP pass coefficients
6 for C and R pass coefficients
C pass: 4*2 for C pass coefficients
R pass: 2 for R pass

total: 36 clocks = 2.25 clocks per coefficient

SP = significance propagation
C = cleanup
R = refinement

SP	SP	SP	SP
C	C	C	SP
SP	SP	SP	SP
SP	R	R	SP